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ABSTRACT

In the literature on differences between Asian and White achievement in mathematics, effort, and ability have been cited as causal variables. Effort is emphasized more by the Asian students and their parents, but ability is emphasized more by Americans than by Asians. This study compared the attributional patterns of Asian Americans and White Americans and included language as well as mathematics so that a more thorough understanding of these cultural differences could be obtained. The Survey of Achievement Responsibility questionnaire was given to 1,106 White and Asian subjects in Seattle public schools. The findings strengthened the validity of previous research. While academic success or failure was attributed more to effort by both groups, the Asians as a group tended to emphasize effort more than Whites. This pattern was reversed for ability. Some attributional pattern differences were also found between content areas. Students believed that a lack of effort is more a cause of failure in language arts than in math/science. Caution must be exercised in the degree of generalizations made. A figure demonstrating the findings graphically, and a list of references are included. (VM)

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**Causal Attributions of Academic Success and Failure:
Asian Americans' and White Americans' Beliefs
about Effort and Ability**

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**Causal Attributions of Academic Success and Failure:
Asian Americans' and White Americans' Beliefs
about Effort and Ability**

Students' attributions of the causes for their success and failures, particularly in mathematics, have received much research attention. Effort and ability have been two causal attributional variables cited in the cross-cultural literature on differences between Asian and American cultures. Both Asian and American students (or their parents) emphasize effort more than ability for academic outcomes; however, Asians tend to place greater emphasis on effort relative to Americans, while Americans emphasize ability relative to Asians (Hess, Chang, & McDevitt, 1987; Holloway, Kashiwagi, Hess, & Azuma, 1986; Mordkowitz & Ginsburg, 1987; Stevenson, Lee, & Stigler, 1986).

There have been studies which compare Asian and American samples on attributional variables but few studies have been identified which compare the attributional patterns of Asian Americans and White Americans. The generality of the cross-national studies to Asian Americans is addressed in this study. In addition, this study examines the attributional patterns between content areas. Since prior studies have focused on mathematics issues, the generalization of these findings will be examined relative to both mathematics and language.

Cross-national studies comparing Asians and Americans on various attributional dimensions have utilized the locus of control construct. Several studies used the original Rotter I-E scale. Japanese undergraduates scored significantly

higher on the external end of the scale than did American undergraduates (Evans, 1981; McGinnes, Nordholm, Ward, & Bhanthumnavin, 1974; Parsons & Schneider, 1974). Similarly, Chinese undergraduates from Hong Kong were more external than Americans (Hsieh, Shybut, & Lotsof, 1969).

In studies using the Levenson IPC scale, which includes a general internality scale (I), a powerful-others scale (P) and a chance or luck scale (C), differences have been found between Chinese from Taiwan and Americans (Lao, 1977) and between Japanese and Americans (Mahler, 1974) on the I scale. In both cases, Americans were more internal. While there was no significant difference between Japanese and Americans on the P scale, Americans were more external than the Chinese. There was no significant difference between the Chinese and Americans on the C scale but the Japanese were more external than Americans. These studies reveal that Asians are more external than Americans but the difference must be qualified when a more specific instrument is used.

One important dimension not addressed by either the Rotter or Levenson scales is outcome—the different causes produced by success or failure conditions. Cross-national differences were noted when success and failure outcomes were evaluated separately. Using the Intellectual Achievement Responsibility questionnaire which yields outcome scores in academic situations, Chiu (1986) found American children more internal for success but more external for failure than children from Taiwan. Using a measure based on causation assigned to characters in stories, Shaw & Iwawaki (1972) found that American children assigned more personal responsibility for failures than for successes but there was no

difference between outcomes for Japanese children. Again, as more specific conditions were evaluated, the finding of higher internality for Americans must be qualified.

Few studies have been identified which used an attribution theory model to examine cross-national differences between Asians and Americans. Kashima and Triandis (1986) had American and Japanese undergraduates take a "culture free IQ test" in which success and failure were manipulated. Japanese students attributed their failures more than their successes to ability (attention and memory) with the opposite pattern for Americans. However, both groups tended to attribute their successes to situational factors and their failures to task difficulty. Given the nature of the task, attributing failure to task difficulty was appropriate. In a Japanese and American cross-national study, Holloway, Kashiwagi, Hess, and Azuma (1986) studied attributional patterns of both children and their mothers for academic success or failure in math. Japanese children and parents chose lack of effort more and lack of ability less for failure than Americans.

Stevenson, Lee, and Stigler (1986) presented mother's attributional assessments of their children's academic success for mothers from Japan, Taiwan, and America. Though no statistical analyses are presented, an inspection of their graphs suggests that Japanese mothers see effort as more a cause of success than mothers from Taiwan who chose effort attributions more than American mothers. While all chose effort more than other causes, Americans had higher ability scores than the Taiwanese whose scores were higher than Japanese mothers. Both Taiwan

and American mothers saw task ease as more a cause of success than Japanese mothers.

One cross-national study which examined attributions of mothers and their children toward mathematics involved subjects from the Peoples Republic of China (PRC), Chinese Americans, and White Americans (Hess, Chang, & McDevitt, 1987). PRC Chinese saw levels of effort as a cause of math failure more than either of the American groups. White Americans believed lack of ability was more a cause of failure than either Chinese group. These data provide evidence that not only are there cross-national differences but also that immigrants to American do not necessarily reflect either the patterns of the Asian homeland nor the patterns of White Americans.

There are cross-national differences in beliefs about causes of success and failure. However, global constructs apparently present a less accurate indication of the belief structure than more finely tuned analyses. Finally, some evidence suggests that patterns identified for groups in an Asian country may not accurately reflect the patterns of Asians from that country living in the United States.

There is research to suggest that there are important attributional patterns between different content areas (Dweck & Licht, 1980; Ryckman & Peckham, 1987; Ryckman & Mizokawa, 1988; Stipek, 1984). No studies were identified which examined this issue in cross-national research. There may be several reasons for this.

First, even within the mainstream of attributional research in the west, that attributions might vary with content areas is relatively new. Hence, that this

variable has not been extended to cross-national research is not surprising. Second, political and economic issues have focused attention on the problems in mathematics and science education in the United States. That researchers would respond to such interest is to be expected. Third, given the possible English language difficulties of more recent immigrants from Asia to America, it may be that researchers assume that achievement might be depressed and hence attributional patterns would be affected. Fourth, instrumentation to measure content area differences has not been readily available until recently.

However, if the attributional patterns of Asian Americans are to be understood fully, attending to more than one content area seems warranted, given the finding that more specific levels of analysis produce more sophisticated understanding of cultural variables.

Method

Subjects

The 1,106 subjects for this study were randomly selected from approximately 15,000 students in grades 4 to 11 who had participated in an "Effective Schools Project" evaluation for the Seattle Public Schools in June of 1984. To control for socioeconomic differences, all subjects selected were those who paid for their school lunches; despite its weakness as a socioeconomic status measure, this was the only index available.

The 545 Asian American students entered into the analyses represents a 50% random sample of Asian American students who met the school lunch

qualification and for whom complete data were available. The 561 White American students constitute an approximately 10% random sample of qualified students. All students entered into the analyses were Americans or permanent residents.

Instrumentation

The *Survey of Achievement Responsibility* (SOAR) is a 40-item group-administered questionnaire for assessing a student's causal attributions for success and failure in specific school-achievement situations. The items on the SOAR are equally divided between success and failure situations, each success item paired with a failure item but dispersed randomly within the instrument.

Weiner's (1976) attributional model is the basis for the four attributional choices to each success or failure multiple-choice item: ability, effort, luck, and task ease/difficulty. The student attributes a success or failure outcome described in the item stem to one of four causes that he or she perceives to be the best explanation for that success or failure. The aggregated scores yield subscales—e.g., the responses for the math/science success situation items are summed into scores for each of the four causal attributions—for a total of 24 subscales: two outcomes (one success, one failure) by three content-area subjects (language arts, math/science, physical education) by the four causal attributions.

Only the variables related to language arts and math/science were examined for the present study. Therefore, only 8 of the 24 subscale scores were analyzed—the two effort and ability attributions for each of the following four conditions: 1) math/science success situations, 2) math/science failure situations, 3) language arts

success situations, and 4) language arts failure situations. Each scale included in the analyses had eight item replications; the maximum score for each scale was therefore 8. Reliabilities and validity for the SOAR have been reported elsewhere (see Ryckman, Sprague, & Peckham, 1985).

Procedures

As an element of the district-wide "Effective Schools Project" assessment, classroom teachers administered the SOAR. Students were told that all data files would be coded to preserve confidentiality. Due to scheduling difficulties, twelfth-grade students had already completed school before the administration date. For all students in grades 4 through 6, and older students with suspected reading difficulties, teachers read the items orally. All other students read the SOAR silently.

Results

The analysis of variance with repeated measures used three predictor variables—the two independent variables of content area (language arts or math/science) and outcome (success or failure situation), and the between-subject moderator variable of student ethnicity (Whites and Asian Americans). This statistical design was applied to the two sets of repeated measures: 1) frequency of attributions to effort and 2) attributions to ability.

Generally, the frequency of attributions to effort exceeded those to ability for both ethnic groups, Asian American or White American. [To facilitate reporting, references to the ethnic groups in this study will hereafter omit the word

"American" unless the omission causes ambiguity.] In the cell breakdowns for the ethnic groups, the means of attributions to effort were 4.090 (for Whites) and 4.448 (for Asians), whereas the means for ability attributions were 1.505 (Asians) and 1.692 (Whites). Hess et al. (1987) reported these same general findings in their chip-allocation and interview study of Chinese, Chinese American, and Caucasian American cohorts—all their subjects attributed more to effort than ability.

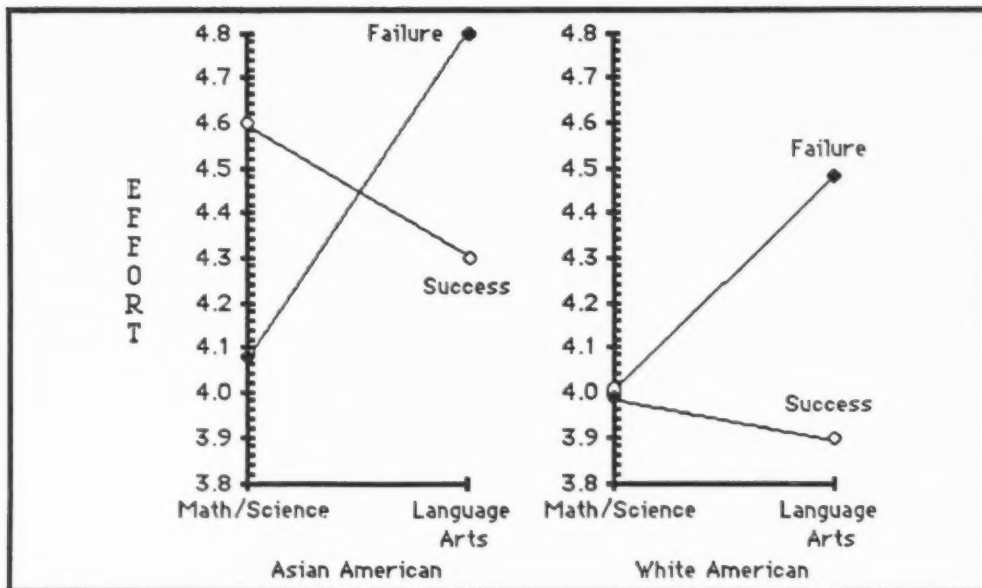
Effort

The main effect of ethnicity was significant, with Asians making higher attributions to effort than did Whites, $F(1, 1104) = 11.5, p < .01$. Content was a significant main effect, with higher attributions of effort to language arts ($M = 4.370$) than to math/science ($M = 4.163$), $F(1, 1104) = 24.8, p < .01$. Outcome was also significant as a main effect, with the failure outcome ($M = 4.330$) higher than the success ($M = 4.203$), $F(1, 1104) = 4.4, p < .04$.

The ethnicity by outcome interaction was significant, $F(1, 1104) = 6.6, p < .01$, as was the content by outcome interaction, $F(1, 1104) = 94.3, p < .01$. However, both were qualified by a significant ethnicity by content by outcome interaction (see Figure 1), $F(1, 1104) = 5.6, p < .02$. For math/science content, Asians saw success as more dependent on effort than failure but with little difference for Whites. Asians and Whites had similar effort scores for failure than for success and the scores for Asians were higher than for Whites. Patterns for math/science and language arts are mirrored for Asians; i.e., success was higher

Figure 1.

Interaction of Ethnicity, Outcome, and Content on Effort



than failure in math/science with failure higher than success in language arts. For Whites, there was little difference in effort scores for success between the content areas but for language arts, effort scores for failure are much higher than for success.

Ability

Recall that the overall frequency of attributions to ability was much smaller than to effort. Yet even with smaller frequencies, important differences emerged. The main effect of ethnicity was significant, with Whites ($M = 1.692$) having

higher scores than Asians ($M = 1.505$), $F(1, 1104) = 11.7, p < .01$. The main effect of content was not significant but the main effect of outcome was, $F(1, 1104) = 82.9, p < .01$. Ability scores for success situations ($M = 1.877$) were higher than for failure ($M = 1.322$).

The interaction between ethnicity and outcome was significant, $F(1, 1104) = 13.5, p < .01$. For both groups the ability attributions for successful outcomes was higher than for failure. There was little difference between the Asians ($M = 1.340$) and Whites ($M = 1.305$) for failure but Whites had higher ability attributions for success ($M = 2.078$) than Asians ($M = 1.669$).

The interaction between content and outcome was significant, $F(1, 1104) = 30.5, p < .01$. For both content areas, success scores were higher than failure scores. For language arts, success ($M = 2.041$) was much higher than failure ($M = 1.222$) compared to math success ($M = 1.712$) versus math failure ($M = 1.422$).

Discussion

Overall, the aggregated findings were that the more global generalizations of previous research contrasting Asians, Asian Americans, and White Americans have been replicated, strengthening their validity. While people generally attribute their academic success and failures to effort more than ability, there are relative differences between Asian and/or Asian Americans and White Americans. The Asians as a group tend to emphasize effort more than White Americans with the reverse pattern for ability.

Attributional pattern differences between content areas are also consistent with prior research. Effort attributions for success do not vary greatly between content areas but failure does. Students seem to believe that lack of effort is more a cause of failure in language arts more than math/science. If one believes failure is a function of lack of effort—an internal, unstable, and controllable attribution—then the possibility of future success is enhanced. Thus, students appear to feel language arts work is more under control. Further, evidence for this belief is provided by the differential ability scores. They believe success is related more to ability in language arts than is true for failure. While the difference is in the same direction for math/science, the failure score is higher and success score lower than for language arts.

Both the cultural deferences and the content differences are modified by the interaction between the two variables, especially for effort attributions. Asian Americans believe effort is more a cause of their success than their failures in math. However, Whites do not differ in effort attributions for different outcomes. Both groups see effort as more a cause of failure than success in language arts, though Whites use effort attributions less than Asian Americans for both outcomes.

While these results are in general agreement with prior research, using the more finely tuned profiles including content areas and outcomes revealed differences between groups not attended to in other cross-cultural studies. A more specific attention to the level of analysis within an attributional model may help to more adequately understand the attributions people make to explain their successes and failures.

It appears that the unit of analysis should be refined as well as the level of analysis in cross-cultural research. Not only do Whites differ from Asian Americans, Asian Americans appear to be different from each other (see Mizokawa & Ryckman, 1988, in a companion research study). Even using such identifiers as Chinese may be too broad. Hofstede's (1980, 1983, 1986) research on cross-national values suggests that there are differences among Chinese in Singapore, Hong Kong and Taiwan. It is not unreasonable to hypothesize that the four dimensions of work-related values described by Hofstede—individualism, power distance, uncertainty avoidance, and masculinity—would be related to causal thinking. Other demographic variables may also need to be considered. For example, in the Lao (1977) study cited earlier, the major difference between the Taiwanese and American samples on the internality scale accrued from the highly external scores of the Taiwanese women. Consequently, it may be necessary to look for the interactions between gender and ethnicity.

While a body of research on causal beliefs has begun to emerge, caution must be exercised in the degree of generalizations made. To characterize all Asian Americans as having a particular set of attributions would be to obscure possibly important differences. Parsimony is laudable but not at the expense of premature closure of necessary exploration.

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